ticularly when it occurs among older people. I should like to have the condition regarded as a more or less specific disease which occurs as a rule after the age of thirty-five. We know, of course, that histologically some of these apparent clinical entities show very diverse pictures. It is not necessary that they be diagnosed definitely as plasmocytomas or myelocytomas or lymphocytomas. It should be sufficient to recognize the undifferentiated character of the cell and to associate this diverse picture with a disease which proceeds in nearly all cases much the same way. I should, therefore, want to remove the so-called myelomas and chloromas which occur in the bones of children and allow these latter to stand as rather special cases which follow no particular course, that might be associated or not with a type of leukemia, and which may be perhaps benefited more by x-ray treatment than the adult type. One may recall that Pepper, a number of years ago, described metastases in the lungs from a multiple myeloma. I would not therefore emphasize, as Doctor Bryan has, the absence of pulmonary metastases as a diagnostic feature.

## THE CONDUCT OF NORMAL LABOR*

*By* JOHN VRUWINK, M. D.
*Los Angeles*

DISCUSSION *by Thomas F. Wier, M. D., San Diego; Albert V. Pettit, M. D., San Francisco; Louis I. Breitstein, M. D., San Francisco.*

ALIVE mother and baby are minimum requirements of obstetrical art. The optimum standard includes a limited degree of trauma, no morbidity, and only a tolerable amount of pain consistent for the birth of an uninjured baby with unimpaired mentality for later life. Yet, this very common and natural phenomenon of birth is frequently complex and difficult, fraught with many dangers.

Let us concede that the physician today realizes the necessity for surgical asepsis, but we cannot concede the fact that he may be inclined to grow careless. Mortality and morbidity depend on the presence of virulent bacteria, but the condition of the host is also an important and vital factor. Attendants who care for infective conditions will continue to care for the very large majority of labors and they must realize that microscopic organisms in the deeper layer of the skin, gland openings, and the nose and throat are not easily removed by scrubbing or atomizers. They must be convinced that they are potential carriers and must be even more careful than the specialist, who runs from infection as from a fire.

### RESPONSIBILITY OF OBSTETRICIAN

Every obstetrician has a responsibility to use certain prophylactic measures to maintain and increase immunity and resistance. First, every patient requires prenatal care to allay fear, to remove foci of infection and further aid resistance by proper food, liquids, rest, and exercise. Second, she requires careful hygienic care during labor, and such is a phase of parturition too frequently neglected. A prodigious amount of energy is expended by the woman in labor, and catabolic changes are inevitable, so that various degrees of acidosis develop, and when given an anesthetic her alkaline reserve is still further reduced. Food, liquids, and rest during labor must be maintained if we wish to reduce morbidity and even mortality, particularly if operative interference becomes necessary. Third, trauma must be limited, for bruised tissue invites and maintains infection. Gross damage is not necessary for incubation purposes, and frequent vaginal and rectal examinations, especially the damage of the cervix by manual dilatation and delivery, or the hurried passage by the fetus through the canal, is more than sufficient. Fourth, each patient requires a true obstetrical diagnosis which includes a complete and general examination. We should have a visual picture of the obstetrical situation at the onset of labor, and then, if we understand the physiology and mechanics of normal labor, we are very likely to know what will happen. A clean vaginal examination to establish such a diagnosis, but not to note progress, outweighs the possibility of introducing infection.

In the aseptic care of our patient, I believe we place too little emphasis on the patient herself, too little study in building and maintaining resistance. During labor, I believe there is too much error due to an incomplete or partial understanding regarding the physiology and mechanics of labor. In the first stage we have recurrent involuntary muscular contractions, the sole aim and object of which are effacement and retraction to the point of complete dilatation. The first stage of labor is merely a dilating stage, such a simple physiological fact, and yet it seems to be a chimerical and utopian fancy to make attendants—including nurses—realize that progress is dilatation, accomplished through involuntary effort. Just why must we forever and ever confuse progress with descent of the presenting part to the point that a number of hours and not the fact of dilatation becomes an indication for cesarean section. Under certain favorable conditions, we may have the synchronous movements of flexion, rotation and descent, but in less favorable conditions, particularly posterior positions with deflection, we most certainly do not have the textbook picture of synchronous action during the period of dilatation.

### CARE IN FIRST STAGE OF LABOR

The first stage demands that our attention be focused on rest, liquids, and food. In short labors, they are naturally of less importance. Labors, however, that begin with indefinite irregular pains usually resolve into long tedious labors with a long dilating stage in which hygienic measures are of inestimable value. In any event, one should expect, if there have been no ill-advised attempts to urge the patient beyond physiological limits, to arrive at the end of the first stage with mother and baby in good condition and the supports of the uterus uninjured.

* Read before the Obstetrics and Gynecology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

When a primipara goes into labor, with a head at the inlet, we anticipate trouble. Sixty per cent of such high heads are associated with the occiput posterior positions, others will be due to various degrees of disproportion, malposition, or an assimilation pelvis with a high promontory. A few should have elective section, but if no definite indication is present the physiological and mechanical factors involved are most important. We should be very grateful to find such a high head become engaged in the first stage, but we must remember that dilatation is progress and that flexion descent and internal rotation frequently occur by a special mechanism and only in the second stage.

It is very rare indeed to have the head of a multipara engaged at the onset of labor; in fact, all we expect is that it fit snugly in the inlet. Advancement will occur in the second stage of labor, and in the absence of disproportion this is especially liable to be precipitant in the multipara.

### SECOND STAGE OF LABOR

The second stage of labor is frequently hurried, but if not it is illogical to take time too seriously as a sole indication for interference. We must bear in mind the marvelous adaptability of the natural processes of labor and it is reasonable to expect differences in time between the vigorous and the delicate, between large and small heads, and in variations in the size and resistance of the birth canal. Any head may be forced through the canal by injudicious efforts with actual or potential injury, both to mother or fetal brain cells. Vigorous voluntary efforts, such as the use of pullers, the abdominal binder and pituitary extract, should be controlled until molding has become definite and after the head has descended to the midplane. Certainly most multipara should be restrained and all primipara should have their energies directed to conserve and protect their efforts.

When we face the problem of inertia let us be sure it is inertia and not merely a matter of time or too much anesthetic. Inertia necessitates intervention, more frequently by well-applied forceps, occasionally by a most judicious use of pituitary extract, except in the primipara.

During labor the state of the child should be frequently ascertained by auscultation. In the first stage, fetal heart tones rarely give evidence of distress, but during the stage of descent babies' lives have certainly been saved and potential brain injury prevented by timely intervention. Fetal auscultation is even more required if the patient has had some form of analgesia, particularly hypodermic medication, for it is an accepted fact that intra-uterine asphyxia predisposes to cranial injury. The day is present in obstetrics when we must give more consideration to the occurrence of petechial hemorrhages in the brain of the newborn, the factor that makes it undesirable to be the first born. We must give more consideration to the problem of molding and preventing too rapid descent; more consideration to the necessity of rapid adaptation in delivering an after-coming head; and must remember that the premature infant is especially liable to cranial injury and that episiotomy may be indicated in spite of the size of the infant's head.

Episiotomy, before the head completely distends the vulva, aids in conserving the structures of the anterior segment and prevents undue pressure on the head when peculiarly resistant. Personally, I do the median episiotomy unless a short perineal body, or a large head, or operative delivery requires the mediolateral incision. Some may be wedded to only one incision in spite of any and all conditions.

One cannot help but emphasize the fact that cesarean section is a formidable operation to be used only on strict indication. We must come to this conclusion after reading the recent reports from Detroit and New Orleans, and by Thompson in Los Angeles. We must admit Pollock is right when he says there is an uncontrollable mortality in cesarean of three to four per cent.

### THIRD STAGE OF LABOR

The third stage of labor has had much attention of late years, yet it may still be maintained that, though the accidents and emergencies of labor carry a definite danger that prenatal care cannot entirely eradicate, the management and conduct of labor does play a most important part on the course of the third stage of labor. The fatigued patient, under an anesthetic, with attempts at expression before separation, is certainly in dire danger of hemorrhage, and consequent lowered resistance and infection. When a patient has been delivered under an anesthetic, I have become more and more convinced that she should be allowed to regain consciousness before expression, and that any repair should be delayed until the placenta has been delivered. Too little emphasis is placed on the probable trauma produced by forceful manipulation of the uterus, particularly when relaxed, as it may be under the influence of the anesthetic. To relieve this relaxation and to save blood, so important in the puerperium and the consequent well-being of our patients, it is rather generally conceded that one cubic centimeter of pituitary extract is of inestimable value when given at the completion of the second stage. In the presence of undue hemorrhage, do not forget that lifting up the uterus and making pressure over the pubis, thus compressing the vessels, may be far more effective than pushing down on the uterus and massage. If this maneuver with the patient out of her anesthetic does not control bleeding, in the absence of cervical tears, the uterus must be packed firmly with gauze and measures taken to prevent shock.

### ANALGESIA AND ANESTHESIA

In discussing the management of normal labor, it is inevitable that we must discuss analgesia and anesthesia. National lay magazines have taken up the hue and cry and we are even now in the midst

of lay publicity such as characterized the twilight sleep propaganda of fifteen years ago. Certainly our profession is eager to relieve pain, but we will always refuse to do so at the expense of the unborn child; and it is not an idle fancy that prompted practically all obstetricians to discontinue twilight sleep. Early in the first stage of labor, especially with delayed dilatation, rest is of vital importance, and a single dose of pantopon or morphin with or without scopolamin is a recognized obstetrical aid. Repeated dosage of scopolamin, however, is another matter. If we could, with machine precision, give just enough and never too much, if we never interfered with muscular control, if we did not produce intra-uterine asphyxia, what a blessing hypodermic medication would become, for it is such a simple method of procedure.

Analgesia is a prenatal problem as well as a problem of labor. Every patient should have the benefit of prenatal care to dispel fear, especially the horrible tales of neurotic women. She should approach labor with assurance that she can have aid when she feels that she requires aid. Women who enter hospitals or call for their physician at home only when definitely in labor frequently arrive at or near the second stage without such a request, and then gas or ether may be given. There are women who demand aid early, frequently too early. There are women, too, who demand cesarean section, or version and extraction. In other words, we must individualize our patients. Most primipara will probably request analgesia. One of the barbital products may with benefit be given a patient to allay her reasonable apprehension, particularly if she goes to a hospital. When dilatation is sufficiently advanced, a single hypodermic of pantopon one-third grain and scopolamin 1/200 may be given, but the method with the least objection and best results is that given to women in labor by Gwathmey. The work of Gwathmey was a painstaking, skillful, intelligent, scientific investigation conducted over a long period of time with many women. It is a deplorable fact that tyros in anesthesia are now attempting to improve on that technique. The cornerstone of his investigation was safety for the child and a minimum of interference with the physiology of labor. Safety for mother and child, and maximum success will be obtained in painstaking hands only by a strict adherence to the method as described by him. When one endeavors to improve this technique by prescribing initial doses of morphin and scopolamin or tries to augment the rectal injection by more powerful medicaments, complications dangerous to the child or interference to the physiology of labor will inevitably follow.

As the head passes through the cervix and proceeds on its downward course some inhalation analgesia is surely indicated. Nitrous oxid and oxygen demand a skilled anesthetist, and is in such hands effective for safety and relieving pain. When gas is not available, ether is the inhalation anesthetic of choice. Ether is to be preferred, particularly in too rapid labor when restraint is advisable. A trained anesthetist only may safely combine nitrous oxid, oxygen, and ether. Chloroform, in the hands of a few, still claims recognition, but the margin of safety is small and it definitely increases acidosis, which is not advisable after long labors or with toxic patients.

Nitrous oxid with a few has fallen into disrepute, but such ill favor is due to faulty mixtures rather than to the method. Interrupted nitrous oxid demands 10 per cent or more of oxygen; less may produce intra-uterine asphyxia.

As the head passes over the perineum, analgesia approaches anesthesia. With anesthesia we confront the problem of complete muscular relaxation with increased hemorrhage and an increased tendency to acidosis, both vital factors in the problem of asepsis, as measured by the resistance of the mother. The anesthetic should be removed as soon as the head is born. The delivery of the shoulders is notoriously hurried, and undue traction and torsion may be entirely avoided by unhurried carefulness.

SUMMARY

Maternal morbidity and mortality depends on the aseptic management of labor. Aseptic management necessitates due consideration of prenatal care, the hygiene of parturition, and personal surgical cleanliness. The first stage of labor is characterized by simple dilatation by involuntary efforts and the second stage of labor by flexion, internal rotation, and descent aided by voluntary efforts. It is not necessary to have the synchronous cardinal movements, especially in posterior positions, until after the completion of dilatation, and all forceful voluntary efforts should be controlled until molding has taken place. More consideration must be given to avoid intra-uterine asphyxia, and forceful completion of the second stage, so as to avoid potential fetal brain cell damage. Analgesia and anesthesia have a definite place in labor, but should be selected so as to avoid intra-uterine asphyxia. The third stage of labor demands conservation of blood and a minimum of trauma. Mothers have a right to demand uninjured babies, of unimpaired mentality.

1136 West Sixth Street.

DISCUSSION

THOMAS F. WIER, M. D. (911 Medico-Dental Building, San Diego).—The value of Doctor Vruwink's paper lies in the emphasis of a successful routine in conducting labor with as little pain as possible to the mother, and with safety to the infant.

What may be termed a normal labor? Doctor Vruwink did not define this in his paper. It seems to me that there are relatively few primiparous patients having a normal labor, one that is free from laceration, episiotomy, or forceps assistance. Of course, if these are not pathological conditions the field of a normal labor becomes broader and the timely application of an outlet forceps with an episiotomy under gas anesthesia saves hours of distress to the mother, protects the soft parts, and I am sure if it were done more frequently, would often save the life of the infant.

It has been my practice during the past five or six years to give one cubic centimeter pituitrin by hypo-

dermic immediately following the delivery of the infant. This, I am sure, hastens the third stage of labor, especially if an anesthetic has been given; it also controls the excessive amount of flow. However, it is well to emphasize that a too hasty delivery of the placenta without pituitrin is a frequent cause of postpartum hemorrhage.

I am very glad to hear Doctor Vruwink condemning the press advertisement of fads which claim to produce labor without pain. Twilight sleep and the Gwathmey method in the hands of the trained, who have sufficient help constantly to watch the patient, will give much better results than in the hands of those who do only an occasional delivery, and yet these procedures prolong labor, increase the use of difficult forceps and cause more frequent postpartum hemorrhage with a higher rate of infant mortality.

I obtain good results from scopolamin 1/200 grain with pantopon one-sixth grain and magnesium sulphate during the first stage, repeating the dosage of scopolamin with magnesium sulphate and using ethylene gas for the anesthesia during delivery.

Some objections are given to the use of ethylene on account of its explosiveness. If we compare with an equal number of ether anesthetics, ethylene will be found to be no more dangerous when proper precautions are taken. Patients are under the effect more quickly and out more quickly. The infant is never, in my experience, partially asphyxiated; contractions are less influenced than with ether, chloroform or nitrous oxid analgesia.

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ALBERT V. PETTIT, M. D. (2000 Van Ness Avenue, San Francisco).—Doctor Vruwink is to be congratulated upon the presentation of a paper on such an important but rarely considered subject.

In the obstetrical literature and obstetrical teaching of our advanced and postgraduate students, far too much stress is laid upon the care or treatment of the rare, spectacular or pathological conditions of obstetrics. The proper conduct of normal pregnancy and labor is the essence of obstetrical art and constitutes the greatest factor in avoiding the majority of obstetrical accidents to the child as well as the mother.

Doctor Vruwink's explanation of just what constitutes progress during the course of labor cannot be overemphasized. With this clearly before us, any delay, even in this mechanism, may be discounted as regards time in the absence of fatigue signs. There is no question in my mind concerning the virtues of Gwathmey obstetrical analgesia, for although certain parts of the mechanics of labor may be slightly prolonged, much is gained in relief of maternal fatigue and in the softening of resistant tissues.

It is true that obstetrical patients have to be individualized just as all patients in other divisions of medicine must be, but I hardly think individualization should be carried to the extent of taking advice from patients in regard to their mode of delivery.

It is to be hoped that articles of this nature on normal obstetrics will appear more often in our literature.

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LOUIS I. BREITSTEIN, M. D. (350 Post Street, San Francisco).—Doctor Vruwink's paper is very important in that it emphasizes our need for a better understanding of the fundamental principles of normal obstetrics. Too often in the busy practice of a physician the normal physiology of the different stages of labor is forgotten, and in our endeavor to relieve pain or shorten labor we give aid which, as far as mother and baby are concerned, would be better had it been omitted. In the great majority of births, end results are best if the normal mechanism of labor is allowed to go on unhampered. If the profession would only follow out the plan Doctor Vruwink has described, birth injuries would be reduced to a minimum and maternal and infantile morbidity would be prevented.

# GRADENIGO'S SYNDROME AND BRAIN ABSCESS*

## SECONDARY TO OTITIS MEDIA—DIFFERENTIAL DIAGNOSIS

## REPORT OF CASES

*By* LEO J. ADELSTEIN, M. D.
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DISCUSSION *by I. Leon Meyers, M. D., Los Angeles; Eugene R. Lewis, M. D., Los Angeles.*

AMONG the problems presented by the complications of otitis media, one of the most baffling to the neurosurgeon or otologist is the decision between a localized meningitis and a true brain abscess. In the former, while the infection has presumably extended to the meninges, the process is well walled off, the exudate is mainly serous, the treatment calls for mastoid surgery alone, and the prognosis is favorable. In the case of a true brain abscess, a condition that is often not so readily recognized, there is actual involvement and destruction of brain tissue, the treatment calls for drastic surgery, and the prognosis even in the best of hands seldom exceeds 50 per cent of recoveries.

### I.—GRADENIGO'S SYNDROME

We wish to emphasize here the clinical entity described by Gradenigo [1] in 1904. This syndrome is a fairly typical and characteristic triad composed of: (1) an acute otitis media, (2) a sixth cranial nerve palsy, and (3) pain in the eye on the affected side. The patient subjectively complains of double vision, and pain of a boring nature, in the eye on the side affected; objectively the patient presents an acute suppurative otitis media, and an internal strabismus on the affected side (a sixth nerve palsy).

### PATHOLOGY OF GRADENIGO'S SYNDROME

The pathological basis of the Gradenigo's syndrome [2] consists of a circumscribed serous meningitis, originating from an involvement of the cells in the petrous pyramid. In the cases where the mastoid is definitely involved, the petrous tip is affected as a result of direct extension of the suppurative process. The infection produces an osteomyelitis of the petrous bone with extension to the overlying dura. The serous meningitis which may follow this process exerts pressure upon the adjacent sixth nerve, as it lies upon the superior surface of the petrous portion of the mastoid. In the cases presenting no clinical evidence of mastoid involvement, the course of the infection from the middle ear to the tip of the petrous bone may be:

1. From the tympanum below the labyrinth and internal auditory meatus to the petrous tip; or

2. By way of the carotid canal, due to erosion of the bone, or of the tympanic foramina which transmit carotid branches of the tympanic plexus; or by the

* From the Neurosurgical, and Ear, Nose, and Throat services of the Los Angeles County General Hospital.
* Read before the Eye and Ear Section of the Los Angeles County Medical Association, May 13, 1929.